National Aeronautics and Space Administration

Hardware Developer

James Klem

Rotorcraft Aeromechanics Research Hardware Developer

San Jose State University Foundation
NASA Ames Research Center

I work with other engineers to design and build hardware to test in wind tunnels. We all work closely with each other to figure out the best way to get the work done. Then I sit down and use all my math, physics, and design skills to come up with a machine with which to do our testing. We take my design into the machine shop, and using all the specialized tools we manufacture the testing machine. After the machine is built, we install it into the wind tunnel and do testing.

Areas of expertise:

- Custom research hardware development
- Aircraft piloting
- Rotorcraft aeromechanics

How I first became interested in this profession:

Since I was young I have been interested in cars. While I was at De Anza College, I got an internship at NASA Ames and started working on a variety of hardware. I met other students here who were pilots, and they convinced me to take flying lessons. After that my interests shifted to aircraft, and now I am a certified aircraft nut.

What helped prepare me for this job:

My background in cars and my interest in aircraft helped me prepare. Learning how to work on cars gave me a strong mechanical background. Then learning how airplanes fly and operate set me up for a position in the job I have now.

My role models or inspirations:

All the pilots I have met through the years are definitely my role models. Also, the researchers who are the leading experts in the rotorcraft field throughout the world are some of the most inspirational people I have ever met.

My education and training:

- A.S., Engine Technology, De Anza College, Cupertino California
- A.A., Liberal Arts, De Anza College, Cupertino California
- B.S., Aerospace Engineering, San Jose State University, in progress
- Private Pilot Certificate, Federal Aviation Administration

My career path:

One year Elgines Machine Shop
Four years Hypergravity Research Hardware Technician
Three years Rotorcraft Research Hardware Development

What I like about my job:

I especially like learning new things. This job demands that you constantly learn the latest in rotorcraft technology, and since I love aircraft and how aircraft work, this job is perfect for me.

What I don't like about my job:

I do not like being unable to solve all the problems that come up as my team moves forward. I would like to have all the answers to all the problems, and be able to fix anything. Fortunately I work in a group of incredibly talented people, so if I can't fix a problem, one of my coworkers will.

My advice to anyone interested in this occupation:

Follow what you really want to do no matter how hard it seems it will be. Be patient, work hard in school, and understand that great things take a while to achieve. And always do things you like, not what you think will make you a lot of money. Also, good math, physics, and mechanical design skills are very important for this job.

Additional Resources:

- American Institute of Biological Sciences
  http://www.aibs.org
- American Physiological Society
  http://www.faseb.org/aps
- American Society for Biochemistry and Molecular Biology
  http://www.biophysics.org/biophys/society/biohome.htm
- American Society for Microbiology
  http://www.asmusa.org
- Astrobiology Summer Academy
  http://academy.arc.nasa.gov/
- Biotechnology Industry Organization
  http://www.bio.org/welcome.html
- Graduate Student Researchers Program
  http://spacelink.nasa.gov/Instructional.Materials/NASA.Educational.Products/Graduate.Student.Researchers.Program.Brochure/.index.html
- MATHCOUNTS Competition
  http://mathcounts.org/
- Minority University Research and Education Programs
  http://mured.nasaprs.com/
- NASA Cooperative Education Program for college students
  http://spacelink.nasa.gov/Educational.Services/NASA.Education.Programs/Student.Support/NASA.Cooperative.Education.Program/.index.html
- NASA Jobs
  http://nasajobs.nasa.gov/
- NASA Office of Life and Microgravity Sciences and Applications
  http://www.hq.nasa.gov/office/olmsa/
- NASA SHARP Internship Program for high-schoolers
  http://www.mtsibase.com/sharp/
- NASA Student Employment
  http://nasajobs.nasa.gov/stud_opps/employment/index.htm
- NASA Student Involvement Program student contests
  http://www.nsip.net/index.cfm
- Order NASA career videos such as "Engineers: Turning Ideas into Reality," "Careers: Aerospace Engineer" or "Reaching for the Stars" from NASA CORE.
  http://core.nasa.gov
- Student's Guide to Astrobiology
  http://www.astrobiology.com/student.html
- Tech-Interns.com
  http://www.tech-interns.com/

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